



ZELTA3D

Prepared at 23 Dec 2020

SLS NYLON PA12 | EOS PA2200 FUNCTIONAL MATERIAL DATASHEET

Description

Our SLS Nylon PA12 or PA2200 material will have good mechanical, biocompatibility, thermal and chemical properties suitable for outdoor and end use applications. As this material is highly functional, it can be used to replace injection molded parts for low volume manufacturing.

OEM Technical Data



Material data sheet

PA 2200

1 General

Typical applications of the material are fully functional parts with high end finish right from the process, which easily withstand high mechanical and thermal load.

PA 2200 is suitable for processing on the following systems:

- EOSINT P 730, P 700
- EOSINT P 390, P 385, P 380i, P 380, with or without powder conveying system
EOSINT P 360 with upgrade S&P, P 350/2 with upgrade 99 and upgrade S&P
- FORMIGA P 100

2 Technical data

General material properties

Average grain size	ISO 13320-11	56	µm
	Laser diffraction	2.20	mil
Bulk density	EN ISO 60	0.45	g/cm ³
Density of laser-sintered part	EOS method	0.93	g/cm ³
		58	lb/ft ³

Mechanical properties

Tensile modulus	EN ISO 527	1700	MPa
	ASTM D638	247	ksi
Tensile strength	EN ISO 527	48	MPa
	ASTM D638	6962	psi

PA 2200
AHO / 12.08

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EOS GmbH – Electro Optical Systems

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Material data sheet

Elongation at break	EN ISO 527	24	%
Elongation at break	ASTM D638	24	%
Flexural modulus	EN ISO 178	1500	MPa
	ASTM D790	217	ksi
Flexural strength	EN ISO 178	58	MPa
	ASTM D790	8412	psi
Charpy - Impact strength	EN ISO 179	53	kJ/m ²
Charpy - Notched impact strength	EN ISO 179	4.8	kJ/m ²
Izod - Impact strength	EN ISO 180	32.8	kJ/m ²
Izod - Notched impact strength	EN ISO 180	4.4	kJ/m ²
Ball indentation hardness	EN ISO 2039	78	N/mm ²
Shore D - hardness	ISO 868	75	-
	ASTM D2240	75	-

The mechanical properties depend on the x-, y-, z-position and on the exposure parameters used.

Thermal properties

Melting point	EN ISO 11357-1	172 - 180	°C
Vicat softening temperature B/50	EN ISO 306	163	°C
	ASTM D1525	325	°F
Vicat softening temperature A/50	EN ISO 306	181	°C
	ASTM D1525	358	°F

The data are based on our latest knowledge and are subject to changes without notice. They do not guarantee properties for a particular part and in a particular application.

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BIOCOMPATIBILITY CERTIFICATE

Testmaterial: PA 2200

Supplier: EOS GmbH
Pasinger Strasse 2, D-82152 Planegg

Studies performed: The following studies were performed in order to determine the biocompatibility of the product PA 2200 according to ISO 10993-1:

CYTOTOXICITY
SENSITISATION, polar extract
SENSITISATION, non-polar extract
INTRACUTANEOUS REACTIVITY

Results: The product did not show any adverse effects in the studies performed. Therefore, the biocompatibility of the test material was proved.

BSL BIOSERVICE Scientific Laboratories GmbH Munich

Behringstraße 6
D-82152 Planegg



Dr. Achim Albrecht

Biological Safety Testing

Date: April 10, 2001



Statement of Compliance - RoHS and WEEE Directives

Trade names

The EOS powders are intended to be used for additive manufacturing with EOS laser-sintering system for plastics.

PA 1101, PA 1102 black, PA 2105, PA 2200, PA 2201, PA 2202 black, PA 2210 FR, PA 2221, PA 2241 FR, PA 3200 GF, Alumide®, EOS PEEK HP3, PrimePart®ST PEBA 2301, PrimeCast®101, CarbonMide®.

Confirmation

We, the EOS GmbH, certify that the above mentioned products fulfill the limits and requirements of

EU Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU and

EU Directive 2012/19/EU on waste electrical and electronic equipment (WEEE).

Based on the information from our material suppliers, we confirm that any accidentally or naturally occurring values are below the specified limits.

The maximum concentration values by weight:

Lead	0.1 %
Mercury	0.1 %
Cadmium	0.01 %
Hexavalent chromium	0.1 %
Polybrominated biphenyls (PBB)	0.1 %
Polybrominated diphenyl ethers (PBDE)	0.1 %
Bis(2-ethylhexyl) phthalate (DEHP)	0.1 %
Butyl benzyl phthalate (BBP)	0.1 %
Dibutyl phthalate (DBP)	0.1 %
Diisobutyl phthalate (DIBP)	0.1 %

Authorized signature
Authorized name



Torsten Schlichtholz – Director Global Quality Management

This certificate is issued on 22 March 2018 and is of unlimited duration until further notice.



Certificate

Food regulatory assessment of laser sintered
polyamide PA 2200

Client: EOS GmbH, 82152 Krailing, Germany

Order: PA/4152/03 and PA/4185/03

The compositional compliance with the EU Plastics Directive 2002/72/EC is stated by the manufacturer of the raw polymer used for the laser sintering process with the restriction for use with non-alcoholic foodstuffs only.

The overall migration and the specific migration of lauro lactam and the used antioxidant into 3 % acetic acid, 10 % ethanol and olive oil at the contact conditions 24 h at 20 °C was in compliance with the overall migration limit 10 mg/dm² contact surface of the article and with the respective specific migration limits according to EU-Plastic Directive 2002/72/EC (Fraunhofer IVV test reports PA/4152/03 dated 30.6. and 3.7.2003). The results obtained from testing sticks are valid for articles of all geometrical forms and thicknesses.

Additionally the effect of the laser sintering process on migratable substances was investigated (Fraunhofer IVV test report PA/4185/03 dated 4.7.2003). The results show that the sintering process does not produce any detectable additional substances compared to the raw polymer. Volatile substances are reduced during the sintering process.

From this it can be concluded that articles produced from PA 2200 by the EOS laser sintering process are in compliance with the EU Plastics Directive 2002/72/EC for the use with all types of foods except high alcoholic foodstuffs at contact conditions up to 24 h at 20 °C.

Fraunhofer Institut
Verfahrenstechnik
und Verpackung

Freising, 17.7.2003

Dr. Roland Franz
(Head of migration laboratory)

Dr. Angela Störmer
(Dep. head of migration laboratory)

Fraunhofer Institut für Verfahrenstechnik und Verpackung, Giggenhauser Str. 35, D-85354 Freising

*DISCLAIMER: Respective users should still conduct their own testing to determine suitability of material we do not make any guarantees or warranties of any kind, expressed or implied. We will only advise based on OEM material specifications.